

- Keogh, B.K., "Optometric Vision Training Programs for Children with Learning Disabilities: Review of Issues and Research," Journ. of Learning Disabilities, Vol. 7, No. 4, pg. 37-48, 1974.
- Lerner, J., Learning Disabilities, Boston, Houghton Mifflin Co., 1981.
- Larsen, S. & Hammill, D., "Relationship of Selected Visual Perceptual Abilities to School Learning," Journ. of Special Education, 9, pg. 282-291, Fall 1975.
- Lewis & Winkelaar, "Identification of Central Auditory Dysfunction in Children with Learning Disabilities," in Arnst & Katz (Ed.), The SSW Test, Development and Clinical Use, College-Hill Press, 1982.
- Lund, K.G., Foster, G., & McCall-Perez, F., "The Effectiveness of Psycholinguistic Training: A Reevaluation," Exceptional Children, 44, pg. 310-321, Feb. 1978.
- Minskoff, E., "Research on Psycholinguistic Training: Critique and Guidelines," Exceptional Children, 42, pg. 136-141, 1975.
- Newcomer, P. & Hammill, D., Psycholinguistics in the Schools, Columbus, Oh., Charles E. Merrill, 1976.
- Salvia, J. & Ysseldyke, J.E., Assessment in Special and Remedial Education, Boston, Houghton Mifflin Co., 1978.
- Spache, G.D., Investigating the Issues of Reading Disabilities, Boston, Allyn and Bacon, Inc., 1976.
- Smith, W., "The Visual System in Reading and Learning Disabilities," Journ. School Health, 2, pg. 144-150, 1969.
- Thurlow, M. & Ysseldyke, J., "Current Assessment and Decision Making Practices in Model L.D. Programs," Learning Disabilities Quarterly, 2, pg. 15-24, Fall 1979.
- Vellutino, F., "Alternative Conceptualizations of Dyslexia: Evidence in Support of a Verbal-Deficit Hypothesis," Harvard Educational Review, 47, pg. 334-354, 1977.
- Vellutino, F., et.al., "Has the Perceptual Deficit Hypothesis Led Us Astray?", Journ. of Learning Disabilities, 10, pg. 375-385, June/July, 1977.
- Ysseldyke, J.E., "Diagnostic Prescriptive Teaching: The Search For Aptitude-Treatment Interactions" in L. Mann & D.A. Sabatino (eds.) The First Review of Special Education. Philadelphia: JSE Press, Grune and Stratton, 1973
- Ysseldyke, J.E. & Salvia, J., "Diagnostic Prescriptive Teaching Two Models," Exceptional Children, 41, pg. 181-186, 1974.

APPENDICES

APPENDIX 1

Spache's Analysis of Perception Tests

TABLE 1-4 THE SCOREBOARD ON VISUAL PERCEPTION

TEST	VALIDITY FOR READING	RELIABILITY	CONTROL OF		
			SPEED	MEMORY	INTELLIGENCE
Bender	-.16 to -.71	.54 to .71	None	None	None .48 to .79
Frostig	.32 to .615 total -.03 to .49 subtests	.69 to .98 total .29 to .74 subtests	Yes	Yes	None .318 to .460
MPD	uses cutoff scores; <i>r</i> 's not known	.74 to .85	Yes	Yes	Yes (?) Norms corrected for I.Q.
Graham- Kendall	Unknown	.72 to .90	None	None	Yes (?) -.60
Winter Haven	.24 to .44	Unknown	Yes	Yes	None
Beery	.33 to .50	.80 to .90	Yes	Yes	None .37 to .70
Benton	Unknown	ca .85	Yes	Yes	Yes Norms corrected for I.Q.
de Hirsch	.55, .63		Yes	Yes	None

reviewed—was the poorest predictor of all, with an average *r* with reading comprehension of .30. Figure and pattern copying, in contrast, ranked 3.5 among the nine readiness factors, yielding an average *r* of .46 with reading comprehension. Figure and pattern matching ranked seventh with an *r* of .36 with reading comprehension. When the opinions of fourteen leading reading authorities were collated by questionnaire, visual design memory and recall was ranked seventh; figure and pattern copying, sixth; and figure and pattern matching, fourth, among the same nine readiness factors in this same study. Reading experts are apparently aware of the limitations of tests of visual design memory and recall; but they tend to underestimate the value of figure and pattern copying and, like workbook writers, overestimate the contribution of figure and pattern matching.

WHERE ARE WE IN PERCEPTUAL TESTING?

Our review of the factors influencing visual perception—and of its dimensions as evidenced by factor analysis and the content of perceptual tests—certainly

APPENDIX 2

Spache's Results of Perceptual Training Programs

University of
 descriptive
 appear to
 possible
 ception
 ins are
 normal
 in these
 less was
 em to
 s their
 were
 e also
 g with
 ders,
 y
 wh
 milar
 and
 is in
 and
 ions
 (25),
 t or
 test
 ties
 on.
 18-
 on,
 en
 en
 ne
 on

TABLE 16-1 A SUMMARY OF INCONCLUSIVE PERCEPTUAL TRAINING EXPERIMENTS
 (EXCLUDING THE FROSTIG PROGRAM)

AUTHOR	POPULATION	TYPE OF PROGRAM	GAINS IN			COMMENT
			PERCEPTION	READINESS	READING	
Bateman (6)	Mentally retarded	Visual motor	Yes			
Wiseman (92)	Mentally retarded	Individualized visual motor	Yes			
Boger (9)	Mentally retarded	Visual motor	Yes			Gains in I.Q. also
Cruikshank (20)	Brain-Injured	Form perception and visual motor	Yes			Gains in I.Q. also
Gallagher (33)	Mentally retarded brain-Injured	Form perception	Yes			Gains tended to dis- appear in second year
Gaunt (34)	Underachieving first graders	Visual motor and some Frostig	Yes			Gains tended to dis- appear in second year
Painter (66)	Kindergarten	Kephart program and Barsch rhythmic	Yes			
Wingert (91)	Kindergarten	Visual motor and auditory	Yes	No		
Bosworth*	Kindergarten pu- pils poor on Winter Haven	Multisensory and form perception	Yes			
Ferinden (27)	Eleven percept- ually handicapped	Visual motor, tac- tile, auditory, spa- tial, and so on.	Yes			
Brown (11)	First graders	Kephart and Getman	Yes		No	
LaPray and Ross (48)	First graders	Kephart and Getman	Yes		No	
Emmons (25)	First graders	Kephart and Getman	Yes		No	
Braley (10)	Four-year-olds	Visual motor, body image	Yes		No	
Fisher (28)	Kindergarten	Individualized visual motor	No	No		
O'Connor (62)	First graders	Kephart	No	No	No	Gains in "internal awareness"
Slacks (77)	First graders	Kephart	No	No	No	
Litchfield (49)	Learning dis- ability, prim- ary pupils	Visual motor	No		No	
McRaney (55)	Primary pupils	Visual motor	No	No	No	

*Mary H. Bosworth, "Prereading: Improvement of Visual-Motor Skills," Doctoral dissertation, University of Miami, 1967.

(Continued on page 408)

SAN FRANCISCO STATE UNIVERSITY

TABLE 16-1 (Continued)

AUTHOR	POPULATION	TYPE OF PROGRAM	GAINS IN			COMMENT
			PERCEPTION	READINESS	READING	
Myerson (60)	First graders	Kephart	No		No	
McBeath (52)	Kindergarten poor in Frostig	Getman-Kephart vs. modified Frostig vs. both		No		
Roach (70)	Remedial upper-middle class, eight years or older	Getman-Kephart			No	
Goins (37)	First grade	Tachistoscopic training in form perception			No	
Jensen and King (45)	Kindergarten	Tracing textured word forms, or matching; arranging plastic letters			No	
Lloyd (50)	First grade	Howard-Dolman chiroscope		No	No	Some gain in spatial relations
Yarborough (93)	Primary	Howard-Dolman chiroscope		No	No	Some gain in spatial relations
Collins and Bidle*	First graders	Motor fitness	Yes	No		Gains in readiness and motor test but same for both groups
Fisher and Turnert	Black kindergarten	Kephart	No	Yes		Six months' training better than full year
Falik†	Kindergarten	Kephart	No	No	No	No differences still in second grade
Sullivan‡	Remedial in fourth-twelfth	Kephart			No	

*Wayner Collins and Rae Bidle, "Motor Fitness Training and Reading Readiness: A Causal Relationship," *Illinois School Bulletin*, 8 (Fall 1971), 13-15.

†Maurice D. Fisher and Robert V. Turner, "The Effects of a Perceptual-Motor Training Program upon the Academic Readiness of Culturally Disadvantaged Kindergarten Children," *Journal of Negro Education*, 41 (Spring 1972), 142-50.

‡L. H. Falik, "The Effects of Special Perceptual Motor Training in Kindergarten on Reading Readiness and on Second Grade Performance," *Journal of Learning Disabilities*, 2 (August 1969), 395-400.

§Joanna Sullivan, "The Effects of Kephart's Perceptual Motor Training on a Reading Clinic Sample," *Journal of Learning Disabilities*, 5 (November 1972), 545-51.

TABLE 16-2 A SUMMARY OF APPARENTLY SUCCESSFUL PERCEPTUAL TRAINING PROGRAMS

AUTHOR	POPULATION	TYPE OF PROGRAM	OUTCOMES
<i>A. Emphasizing Visual Discrimination</i>			
King (47)	Kindergarten	Letters, words, form perception	Combination of meaning, sound, and picture test. Letter training next best, geometric forms and matching words poorest.
Muehl (57, 58)	Kindergarten	Letters composing words versus words	Letter names interfered with learning words composed of them.
Muehl and King (59)	Kindergarten	Letters, words, forms	Training sequence best: matching letters and words; letter discrimination and letter names; sound, picture and word together.
Popp (67)	Beginning readers	One-, two-, and three-letter trigrams	Letter discrimination training effective.
Staats (80)	Kindergarten	Letters versus words	Letter discrimination (no names) inferior to words.
Williams (89)	Kindergarten	Matching, copying, tracing forms	Give training to overcome specific confusions, not just copying or tracing.
Wheelock (88)	Kindergarten	Tachistoscopic presentation of capital letters	Lowest scores but greatest gain for low socioeconomic.
<i>B. Emphasizing Perceptual-Motor Training</i>			
McCullouch (54)	Kindergarten	Visual motor plus some Frostig	Gains in readiness.
Turner and Fisher (82)	Kindergarten disadvantaged pupils	Kephart	Gains in readiness and perceptual motor.
New Jersey (61)	Primary	Perceptual-motor plus usual reading instruction	Control group better after one year, no differences after second or third years. Some benefits for slower learners in reading or readiness.
Weisman and Leonard (87)	Low socioeconomic K to I	Perceptual-motor (Frostig, Kephart, Cratty)	Gains in reading persisted a year later.
Beaupre and Kennard (7)	Kindergarten	Contrasted six programs	Visual motor best, Frostig poorest in producing gains in readiness.

TABLE 16-2 (Continued)

AUTHOR	POPULATION	TYPE OF PROGRAM	OUTCOMES
Gould, Henderson, and Scheele (39)	Kindergarten	Getman plus auditory and tachistoscope	Gains in readiness particularly for boys.
Keim (46)	Kindergarten poor on Bender	Winter Haven plus usual kindergarten	Gains in matching and copying forms on readiness test and on Bender.
Spache et al. (79)	First grade	Winter Haven, chalkboard plus selected seatwork	Low mental ability and low socioeconomic pupils excelled controls in reading.
Wimsatt (90)	Kindergarten	Kephart versus physical education activities	Experimentals higher in readiness.
Rutherford (74)	Kindergarten	Getman-Kephart	Experimentals, particularly boys, higher in readiness.
Coronado (Mandell)	Primary	Getman plus auditory	Gains in visual skills, reading, spelling, and perceptual-motor skills.
Morgan*	Third-fourth	Winter Haven chalkboard	Gains in reading comprehension.

*Mavis Welch Morgan, "The Effect of Visual Perceptual Training upon Subsequent Scholastic Progress of Children with Specific Visual Disabilities," Master's thesis, University of Nevada, August 1966.

or hand-eye coordination, ocular control and motility, and the rest is relevant to readiness and reading, if we may believe the results of our own research (79) as well as the others. These types of training do benefit low socioeconomic or low intelligence children. The training does facilitate their early learning in reading, while it does nothing for most middle and upper-class children. Perhaps what we are discussing is a matter of the development of the child in visual-motor skills, orientation to direction and his own body and hand-eye coordination. It is almost axiomatic that children who are deprived by reason of socioeconomic status are lacking in the foundational sensorimotor experiences common to other children. Some of this group, not all, distinctly benefits from visual-motor training to the point where they can compete reasonably in learning to read with middle-class children whose homes and background have supplied this type of experience. The training is not generally good for lower-class deprived children but must be related to observation of their specific needs. The Roach-Kephart Perceptual Motor Survey, which we reviewed in the section on perception tests, is a possibility

TABLE 16-3 SCOREBOARD ON THE FROSTIG PERCEPTUAL TRAINING

SOURCE, GRADE, N OF CASES	GAINS ON FROSTIG TEST	GAINS ON READINESS TEST	GAINS ON READING TEST	FROSTIG VERSUS OTHERS
Illey (1): 108 disadvantaged kindergarten	Significant	Significant		8 months Frostig versus no Frostig
Jrciszewski (3): 34 first grade	Significant		Not significant	Phonics program
eaupre & Ken- nard (7): ca. 75 kindergarten		Not significant		Five other programs all superior to Frostig
uckland (12): 16 first-grade classes	Not significant		Not significant	Listening to stories and dis- cussion
John (15): 155 first grade	Significant		Not significant	
John (16): 120 first grade			Not significant	
austman (26): 14 kindergarten classes			Significant	Kephart programs plus Winter Haven plus Frostig
ortenberry (29) first grade			Not significant	Frostig plus usual readiness
ac (43): Pre- kindergarten, kin- dergarten, and first grade—300		Not significant		
acobs (43): Pre- kindergarten to third—300		Not significant	Not significant	
umfrey & Anthony (68): 24 physically handicapped	Not significant			Frostig program keyed to initial Frostig test versus total Frostig vs. none
Rosen (72)	Significant		Not significant	
Wingert (91): 54 kindergarten	Significant	Not significant		
Gamsky and Lloyd:* 20 kindergarten classes			Not significant	Lowest in Frostig were lowest in read- ing after training

*Neal R. Gamsky and Faye W. Lloyd, "A Longitudinal Study of Visual Perceptual Training and Reading Achievement," *Journal of Educational Research*, 64 (July-August 1971), 451-54.

TABLE 16-3 (Continued)

SOURCE, GRADE, N OF CASES	GAINS ON FROSTIG TEST	GAINS ON READINESS TEST	GAINS ON READING TEST	FROSTIG VERSUS OTHERS
Pryzwansky: 559 kindergarten*		Not significant		
McCullough (54): kindergarten		Significant		Frostig plus a visual-motor program
McBeath (52): kindergarten		Not significant		Modified Frostig versus Getman-Kephart versus both
Wiederholt and Hammill: 70 low- income first grader†	Significant (if the Frostig was completed)	Not significant	Not significant	Gains on the Frostig not significant for initially low scorers
Belmont et al.: 30 in first, low in readiness‡			Not significant	Frostig plus the Kephart
Swanson: 63 black second graders poor in word recognition§			Significant	Frostig or Frostig plus regular program better than regular alone
Sherk: 75 dis- abled readers	Not significant		Not significant	Remedial plus Frostig versus remedial alone
Linn: 30 in kindergarten#	Significant		Not significant	
Mould: 21 per- ceptually hand- icapped**	Significant		Not significant	Experimentals gained in oral but neither of groups in silent
Bennet: Four second-grade classes††	Significant		Not significant	Experimental gained in nonlanguage I.Q.

*Walter B. Pryzwansky, "Effects of Perceptual-Motor Training and Manuscript Writing on Reading Readiness Skills in Kindergarten," *Journal of Educational Psychology*, 63 (April 1972), 110-15.

†J. Lee Wiederholt and Donald D. Hammill, "Use of the Frostig-Horne Visual Perception Program in the Urban School," *Psychology in the Schools*, 8 (July 1971), 268-74.

‡Belmont, H. Flagenheimer, and H. G. Birch, "Comparison of Perceptual Training and Remedial Instruction for Poor Beginning Readers," *Journal of Learning Disabilities*, 6 (June 1973) 230-35.

§R. G. Swanson, "A Study of the Relationship between Perceptual-Motor Skills and the Learning of Word Recognition," *Dissertation Abstracts*, 29 (1968), 2158-A.

||John K. Sherk, "A Study of the Effects of a Program of Visual Perceptual Training on the Progress of Retarded Readers," *Dissertation Abstracts*, 28 (1967), 4392-A.

#S. H. Linn, "From the Classroom: Visual-Perceptual Training for Kindergarten Children," *Academic Therapy Quarterly*, 4 (Summer 1967), 255-58.

**R. E. Mould, "An Evaluation of the Effectiveness of a Special Program for Retarded Readers Manifesting Disturbed Visual Perception," *Dissertation Abstracts*, 26 (1963), 228.

††R. M. Bennet, "A Study of the Effects of a Visual Perception Training Program upon School Achievement, I.Q. and Visual Perception," *Dissertation Abstracts*, 29 (1968), 3864-A.

APPENDIX 3

Policy Statement: Optometric Extension Program

The Eye and Learning Disabilities*

Nathan Flax, O.D.

The American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology have recently issued a joint organizational statement titled "The Eye and Learning Disabilities".** This paper, prepared by an ad hoc committee of the three organizations with the assistance of the president and the past president of the Division for Children With Learning Disabilities, states that the eye and visual training in the treatment of dyslexia and associated learning disabilities have been reviewed, and cites fifteen references and one bibliographic item.

Among the conclusions offered is that vision training and glasses are ineffective and, "Furthermore, such training has frequently resulted in unwarranted expense and has delayed proper instruction for the child." This statement would seem to be directed at a licensed profession, optometry, which is the only profession specifically licensed to practice visual training. In view of the seriousness of this allegation and since it is directly endorsed by

three prestigious organizations which clothe it with an aura of respectability and implied scholarship, it necessary that the position statement and its supporting documentation be subjected to scrutiny.

It is the intent of this paper to challenge the conclusions of "The Eye and Learning Disabilities" as they relate to vision. It is not the purpose of this paper to defend the practice of vision training by those unlicensed to perform this service, nor is it the purpose of this paper to defend the neurological organization approach espoused by Doman and Delacato. The refutation of this joint organizational statement will be made without resorting to any supporting documentation other than the references cited. This can be done because of gross distortions and inaccuracies in the use of the reference material.

The position statement does not make any particular attempt to define the terms "dyslexia" or "learning disability." The cited references utilize operational definitions which vary considerably from reading retardation of any etiology to a more narrowly defined concept of dyslexia as a specific, incurable entity due to a specific brain lesion. This often contradictory use of terminology demonstrates, at the very least, naivete on the part of the ad hoc committee and, at the worst, an intentional unscholarly and dishonest presentation.

*Reprinted from the journal of the American Optometric Association, June 1972, 43 (6).

**Pediatric News, February, 1972, Page 1, 63-66. Sight Saving Review, Vol. 41, #4, Winter 1971-1972, Page 183. This Joint Organizational Statement with references is included as an Appendix, exactly as it appeared without editing.

Flax², Bettman et al.³, and Norn et al.⁴ are cited to document the statement that children with learning disabilities have the same incidence of ocular abnormalities as children who are normal achievers and read at grade level. Flax² states that visual acuity and refractive errors do not particularly relate to scholastic success, but he lists a number of other visual factors which do correlate with reading achievement. He differentiates between visual factors which render reading inefficient (and therefore contribute to the more general problem of reading retardation) and other visual factors which interfere with the acquisition of word recognition skills. The thrust of the article is quite different from that implied by the use of the citation. Flax states "the role of visual function in learning disability may run the gamut from interferences in the more mechanical aspects of vision (such as binocular fusion, accommodation, and eye aiming), which will limit efficiency at the reading activity, to a failure of development of adequate visual perception abilities which will make it impossible to develop fundamental word recognition skills."

The paper by Bettman, Stern, Whitsell, and Gofman³ is also used to support the statement that children with learning disabilities have the same incidence of ocular abnormalities as children who are normal achievers. This article is worthy of much closer consideration. The study reports on 47 dyslexic children, defined as reading on an average 2.2 grades below their grade level and as having been diagnosed by the Pediatric Child Study of the University of California as having specific learning disorders. The ophthalmological examinations support the notion that there are no differences between this population and a control population in terms of visual acuity, amblyopia and strabismus, but they state: "Yet, 42% of dyslexic children had foveal suppression detected by the four diopter prism test at distance or near, compared with 9% of the controls. The difference is highly significant statistically (chi square greater than 14) and may indicate another neuro-muscular abnormality frequently present in dyslexia." "Fifty-two percent of dyslexic children showed gross jerkiness of their

eyes in attempting to follow a pencil tip moved along a diagonal line. Only 11% of the controls had such jerkiness. The difference between the two groups was readily apparent to the observer and is highly significant statistically ($X^2 = 6.9$). This may be another manifestation of defective fine motor coordination." They also indicate differences in retinal rivalry between dyslexics and a control population. The contention that there are no differences in ocular function between dyslexics and normals is certainly not supported by this reference.

The article by Norn, Rindziunsky and Skydsgaard⁴ is also cited to support the notion that there are no differences in ocular characteristics between normal children and those not reading at grade level. These authors carefully distinguish between primary reading retardation, which they call specific dyslexia, and secondary reading difficulties, which they feel constitute by far the largest group of reading disabled persons. They consider specific dyslexia to be a hereditary disorder, probably due to a lesion in the parietal-occipital lobe. So fixed are they in their opinion of specific dyslexia being due to an organic defect that they state: "if a cure is obtained, this must be due to a mistaken diagnosis." They further state: "visual anomalies may, of course, render reading extremely difficult but it is not the cause of specific dyslexia." They cite the role of visual anomalies in the general problem of reading disability, while denying visual influence in that type of reading disability which they feel is due to brain lesion and incurable. Incurable reading disorders represent a very small portion of all reading or learning problems encountered. Interestingly, their data indicate that dyslexic children show a much higher incidence of subjective ocular complaints during near work than their controls, and they also state that there is a preponderance of latent strabismus in the wordblind group as compared to the controls. The utilization of this reference to support the notion that children with learning disabilities have the same incidence of ocular abnormalities as children who are normal achievers represents a gross misinterpretation of the article. Norn et al. carefully point out the differences between

what they consider to be an incurable form of *specific dyslexia* of very low incidence and the more general problem of reading retardation and they conclude: "The results of this study thus afford evidence to suggest that visual defects bear no causal relation to specific dyslexia. However, this primary handicap may, of course, be intensified when visual anomalies playing a relevant part in near work, including reading, are present at the same time. It rests with the ophthalmologist to take care that such are not overlooked."

Papers by Goldberg and Drash⁵ and Goldberg⁶ are used to document the statement "studies have shown there is no peripheral eye defect which produces dyslexia and associated learning disabilities." Neither paper contains any data on visual measures other than a report of eye dominance of 72 children in the first paper. The second paper is based on the study of 100 children with reading difficulties. No data whatever pertaining to eyes or vision is presented. The literature concerning the relationship of eyes, vision, and reading is hardly sampled in either article and when it is, it is done confusingly. In the first paper, Park is cited as reporting no differences in visual function between normal and retarded readers. In the second article, Park is cited quite differently: "Muscle imbalance and strabismus do not affect the interpretation of symbols but the effort to overcome such a weakness and to see binocularly may cause fatigue and discourage reading. There may be alternate fusion and suppression. Convergence insufficiency and other muscle anomalies have been found in a large percentage of cases (Park)."

Goldberg and Drash⁵ write of "the optometric point of view" and yet, among 47 citations, only refer to one article in the optometric literature, that one written by an educator. They attribute statistics to optometric sources without citation and demonstrate a somewhat naive concept of current optometric practice since they indicate that, among other things, the metronoscope is of importance in visual training. This instrument has not been manufactured for more than 25 years and is currently largely a museum item.

Six references are cited to discredit the role

of visual training and glasses in improving academic abilities of learning disabled children. These references must be evaluated in terms of honesty of scholarship, since none of the references are in fact concerned with vision training or with glasses. All are papers about the neurological organization or patterning procedures of Doman-Delacato. Not one discusses glasses or vision training prescribed by licensed practitioners. Let us look at them closely.

The article by Robbins⁷ about the Doman-Delacato Theory, doesn't discuss vision training, and the only eye procedure mentioned is the utilization of a red lens to change dominance. Red lens techniques do not represent a significant aspect of optometric vision training and are generally utilized only in treatment of a certain type of amblyopia.

The Cohen, Birch and Taft paper⁸ also concerns itself with the Doman-Delacato patterning techniques and does not discuss eye exercises or vision training. There is only one mention of the eye and that has to do with occlusion techniques to change dominance. There is no mention of vision training or glasses.

The article by Freeman⁹ discusses patterning as a treatment for brain-damaged children. There is a single mention of visual training having to do with some of the procedures done at the Institute for Human Potential. This article does not concern itself with visual training done by optometrists or ophthalmologists, nor with glasses.

The two other articles^{10, 11} used to "document" the statement that visual training and glasses are of no value in cases of academic disabilities are likewise not pertinent to the argument. "The Role of Patching in Learning" by Goldberg¹¹ is concerned with eye patching to shift dominance, another aspect of Doman-Delacato treatment. Again, glasses and/or visual training are not discussed.

The next article, also by Goldberg¹², concerns itself with ocular motility in learning disabilities. Goldberg contends that reading facility itself influences the recording of eye movements as made with the ophthalmograph, but fails to realize that there is also the possibility of poor oculomotor control influ-

ending reading. He utilizes a technique for measuring eye movements which records the movement of one eye only, thereby making impossible identification of binocular problems during reading. This article does not deal with vision training. It does not concern itself with fusion problems, accommodative inefficiency, or a number of other aspects of vision which are normally treated through visual training techniques, and it hardly represents the basis upon which to state that visual training has nothing to do with learning disability. As a matter of fact, Goldberg states: "The relative importance of good ocular movement to good reading becomes apparent when one considers that the smoother and more accurate binocular activity, the faster and more efficient is reading."

The strong, inflammatory statement in the position paper that vision training has frequently resulted in unwarranted expense and has delayed proper instruction for the child remains totally unsubstantiated. No documentation of any sort (not even of the very weak scientific caliber of the previously cited references) is offered.

Rosen¹³ is cited to disprove the efficiency of perceptual training in the classroom. The study disclosed that low perceiving boys in the experimental group showed higher reading achievement than low perceiving boys in the control group. Far from being documentation to refute perceptual training, the Rosen article actually offers support for this type of treatment when offered to appropriately selected children.

Smith¹⁴ also is used to refute the role of perceptual training. Rather than refutation, the author states: "Many elements of current theories concerning the interrelationships of perceptual development and sensory motor activity are not new but have their roots in psychological theories of perception constructed in the past. Suggested perceptual-motor training may provide important implications for elementary school physical education programs for all children, not just those who have learning disabilities."

It has been the purpose of this article to systematically review the position statement

offered by the ad hoc committee and approved by the American Academy of Pediatrics, the American Academy of Ophthalmology, and the American Association of Ophthalmology as it pertains to the eye and learning disabilities. The distorted utilization of reference materials is monumental. Perhaps the final nonsequitur is the single bibliographic item by Keeney and Keeney. It has absolutely nothing to do with anything referred to in the position paper, but rather concerns itself with the successful life adjustments made by nineteen blind physicians. What it has to do with the position statement is beyond the understanding of this writer other than the possibility that the pseudo scientific format of the position paper required a bibliographic reference and it was assumed that no one would bother to check it.

The dissemination of this statement as a conclusion of the American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology does a disservice to the public and represents an affront to the academic community. The posi-

Seeking a PRINCIPAL and full STAFF for new Learning Disabilities Residential Program for Adolescents at the DeVeaux School, Niagara Falls, New York. Special Lighthouse School will be funded by combination of New York State support, private tuition, and endowment.

Beautiful 50 acre fully equipped campus, competitive salary, housing and benefits. DeVeaux, formerly a college prep school, closed last year because of declining enrollment. Expect to begin in September with full staff, 8-10 students, grow to 25 students within a year. Are prepared to grow to 125 boarders and 35 day students within five years.

Contact: The Rev. Hugh G. Carmichael, Executive Director, DeVeaux School, Niagara Falls, New York, 14305. Before May 17.

tion paper attempts to discredit visual training and the use of glasses in cases of dyslexia and learning disability. It offers absolutely no supporting material for this conclusion. Almost all of the references offered have nothing to do with the topic. The few which are germane actually support a *positive* relationship between vision and learning disabilities. At the very least, better scholarship and intellectual honesty is to be expected of these organizations. — *Optometric Center of New York, 122 East 25th Street, New York, New York 10010.*

*The following joint organizational statement on the eye and learning disabilities has been approved by the American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology.**

The problem of learning disability has become a matter of increasing public concern, which has led to exploitation by some practitioners of the normal concern of parents for the welfare of their children. A child's inability to read with understanding as a result of defects in processing visual symbols, a condition which has been called dyslexia, is a major obstacle to school learning and has far-reaching social and economic implications. The significance and magnitude of the problem have generated a proliferation of diagnostic and remedial procedures, many of which imply a relationship between visual function and learning.¹

The eye and visual training in the treatment of dyslexia and associated learning disabilities have recently been reviewed with the following conclusions by the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology:

1. Learning disability and dyslexia, as well as other forms of school underachievement, require a multi-disciplinary approach from medicine, education and psychology in diag-

nosis and treatment. *Eye care should never be instituted in isolation when a patient has a reading problem.* Children with learning disabilities have the same incidence of ocular abnormalities, e.g., refractive errors and muscle imbalance, as children who are normal achievers and reading at grade level.^{2 3 4} These abnormalities should be corrected.

2. Since clues in word recognition are transmitted through the eyes to the brain, it has become practice to attribute reading difficulties to subtle ocular abnormalities presumed to cause faulty visual perception. Studies have shown that *there is no peripheral eye defect which produces dyslexia and associated learning disabilities.*^{5 6} Eye defects do not cause reversals of letters, words, or numbers.

3. No known scientific evidence supports claims for improving the academic abilities of learning-disabled or dyslexic children with treatment based solely on:

- a) visual training (muscle exercises, ocular pursuit, glasses).^{7 8 9 10 11 12}
- b) neurologic organizational training (laterality training, balance board, perceptual training).^{13 14}

Furthermore, such training has frequently resulted in unwarranted expense and has delayed proper instruction for the child.

4. Excluding correctable ocular defects, glasses have no value in the specific treatment of dyslexia or other learning problems. In fact, unnecessarily prescribed glasses may create a false sense of security that may delay needed treatment.

5. The teaching of learning-disabled and dyslexic children is a problem of educational science. No one approach is applicable to all children. A change in any variable may result in increased motivation of the child and reduced frustration. Parents should be made aware that mental level and psychological implications are contributing factors to a child's success or failure. Ophthalmologists and other medical specialists should offer their knowledge. This may consist of the identification of specific defects, or simply early recognition.

The precursors of learning disabilities can often be detected by three years of age. Since remediation may be more effective during the

*This statement was prepared by an ad hoc committee of the American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology. Reprinted by permission of the American Academy of Pediatrics.

early years,¹⁵ it is important for the physician to recognize the child with this problem and refer him to the appropriate service, if available, before he is of school age. Medical specialists may assist in bringing the child's potential to the best level, but the actual remedial educational procedures remain the responsibility of educators.

REFERENCES

1. Manos, L.: *Optometric Extension Program*, Duncan, Oklahoma.
2. Flav, N.: *Visual function in learning disabilities*. *J. Learning Disabilities*, 1:551, 1968.
3. Bettman, J. W., Jr., Stern, E. L., Whitsell, L. J., and Gofman, H. F.: *Cerebral dominance in developmental dyslexia: Role of ophthalmologist*. *Arch. Ophthalmol.*, 78:722, 1967.
4. Norn, M. S., Rindziunsky and Skydsgaard: *Ophthalmologic and orthoptic examinations of dyslectics*. *Acta. Ophthalmol.*, 47:147, 1969.
5. Goldberg, H. K., and Drash, P. W.: *The disabled reader*. *J. of Pediat. Ophthalmol.*, 5:11, 1963.
6. Goldberg, H. K.: *The ophthalmologist looks at the reading problem*. *Amer. J. Ophthalmol.*, 47:67, 1959.
7. Robbins, M. P.: *Test of the Doman-Delacato rationale with retarded readers*. *J.A.M.A.*, 202:389, 1967.
8. Cohen, H. L., Birch, H. G., and Taft, L. L.: *Some considerations for evaluating the Doman-Delacato "patterning" methods*. *Pediatrics*, 45:302, 1970.
9. Freeman, R. D.: *Controversy over "patterning" as a treatment for brain damage in children*. *J.A.M.A.*, 202:385, 1967.
10. *Committee on the Handicapped Child: Doman-Delacato treatment of neurologically handicapped children*. *American Academy of Pediatrics Newsletter*, June 1, 1968.
11. Goldberg, H. K.: *Role of patching in learning*. *J. Pediat. Ophthalmol.*, 6:123, 1969.
12. Goldberg, H. K., and Arnott, W.: *Ocular motility in learning disabilities*. *J. Learning Disabilities*, 3:160, 1970.
13. Rosen, C. L.: *An experimental study of visual perceptual training and reading achievement in first grade*. *Percept. Motor Skills*, 22:979, 1966.
14. Smith, H. M.: *Motor activity and perceptual development*. *J. Health-Physical-Recreation*, February, 1968.
15. McMahon, J.: *Children's Hospital Developmental and Evaluation Clinic*, Denver, Colorado.

BIBLIOGRAPHY

- Keeney, A. H., and Keeney, V. T.: *Blindness among practicing physicians*. *Arch. Ophthalmol.*, 43:1036, 1950.

JUST PUBLISHED

Learning Problems in the Classroom

Marianne Frostig

Phyllis Maslow

This teacher-oriented volume presents the ideas, opinions, and facts that are influential in today's education, comparing and evaluating them on the basis of current knowledge and the authors' personal experience in the classroom.

The methods described are designed not only for children whom school authorities have identified as having learning problems, but also for children who may at some future time develop learning and behavior problems when faced by tasks or stresses beyond their ability. Most of the suggestions for evaluating, programming, and teaching, therefore, apply to all children.

May 1973, 368 Pages, \$11.50 ISBN 0-8089-0783-2

GRUNE & STRATTON, INC., 111 Fifth Ave., New York, N.Y. 10003
A Subsidiary of Harcourt Brace Jovanovich, Publishers

APPENDIX 4

Policy Statement: American Academy of Ophthalmology

POLICY STATEMENT

AMERICAN ACADEMY OF OPHTHALMOLOGY

California Association of Ophthalmology
5757 West Century Boulevard
Los Angeles, California 90045
(213) 645-4908

LEARNING DISABILITIES, DYSLEXIA AND VISION

Policy:

The American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus support the position that a child or adult with dyslexia or a related learning disability should receive:

- a. early medical, educational or psychological evaluation and diagnosis.
- b. treatment with educational procedures of proven value, demonstrated by scientifically valid research.

Background:

The problems of dyslexia and related learning disabilities have become matters of increasing public attention. A child's or adult's inability to read with understanding, as a result of defects in processing visual symbols, is a major obstacle to school learning and may have far-reaching social and economic implications. The normal and appropriate concern of parents for the welfare of their children and of society for its disadvantaged has fostered a proliferation of purportedly diagnostic and remedial procedures, many of which are controversial. Therefore, the diagnosis and treatment of dyslexia and associated learning disabilities have recently been reviewed with the following conclusions endorsed by the American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus.

Evaluation and Conclusions:

1. Dyslexia and related learning disabilities, as well as other forms of learning under-achievement, require a multidisciplinary approach from medicine, education, and psychology in evaluation, diagnosis and treatment. Certain symptoms may be detected during infancy and early childhood through the use of screening techniques by educational specialists. Children with potential problems include those with speech defects, emotional problems, or family history of learning disability. These individuals should be assessed by educational and psychological specialists as early as possible to identify individuals who may exhibit indications of learning disabilities.

2. Eye care should never be instituted in isolation when a person does have dyslexia or a related learning disability. Children identified to have such problems should be evaluated for general medical, neurologic, psychologic, visual and hearing defects. If any problems of this nature are found, they should be corrected as early as possible.
3. Since clues in word recognition are transmitted through the eyes to the brain, it has, unfortunately, become common practice to attribute reading difficulties to subtle ocular abnormalities, presumed to cause faulty perception. Although eyes are necessary for vision, the brain encodes visual information resulting in "visual perception." Attention directed to the eyes would not be expected to have any effect on the brain's processing of visual stimuli. Indeed, children with dyslexia or related learning disability have the same incidence of ocular abnormalities, e.g., refractive errors and muscle imbalance (including near point of convergence and binocular fusion deficiencies), as children without.^{1,2,3} There is no peripheral eye defect which produces dyslexia and associated learning disabilities.⁴ Eye defects do not cause reversal of letters, words, or numbers. Indeed, recent studies suggest dyslexia and associated learning disabilities may be related to genetic,⁵ biochemical,⁶ and/or structural brain changes. Further controlled research is warranted.
4. No known scientific evidence supports claims for improving the academic abilities of dyslexic or learning disabled children, or modification of delinquent or criminal behavior, with treatment based on:
 - a) visual training, including muscle exercises, ocular pursuit or tracking exercises, or glasses (with or without bifocals or prisms), 8-14
 - b) neurologic organizational training (laterality training, balance board, perceptual training).^{2-4, 8-14,15}

Furthermore, such training frequently yields deleterious effects. A false sense of security is created which may delay or prevent proper instruction or remedial therapy. The expense of such procedures is unwarranted, and appropriate remedial educational techniques may be omitted. Improvements claimed for visual training or neurologic organizational training typically result from those remedial education techniques with which they are combined.

5. Excluding correctable ocular defects, glasses (with or without bifocals or prisms) have no value in the specific treatment of dyslexia or a related learning disability. In fact, unnecessarily prescribed glasses may create a false sense of security, delaying needed treatment.
6. The teaching of dyslexic and learning disabled children and adults is a problem of educational science. Proper, proven, expert educational and psychological testing should be performed to identify the type of learning disability. Since remediation may be more effective during early years,¹⁰ especially prior to the development of a pattern of failure, early diagnosis is paramount. As mental and psychological factors contribute to a child's success or failure, no single educational approach is applicable to all children. A change in any variable may result in improved performance and reduced frustration (including placebo benefits).

The American Academy of Ophthalmology and American Association for Pediatric Ophthalmology and Strabismus strongly support the early diagnosis and appropriate treatment of persons with dyslexia and related learning disabilities. The Academy and Association commit themselves to these efforts and to scientifically verified research on the cause, diagnosis, and remediation of these conditions or defects.

Developed by: Ad Hoc Working Group
of the
American Association for Pediatric
Ophthalmology and Strabismus
and
American Academy of Ophthalmology

Approved by: Board of Directors, A.A.P.O.S. 5/7/81
and
Board of Directors, A.A.O. 6/27/81



Infant And Children's Eye Care

A statement by the
American Academy of Ophthalmology
to the
Select Panel for the Promotion of Child Health
Department of Health and Human Services

California Association of Ophthalmology
5757 West Century Boulevard, Ste. 830
Los Angeles, California 90045
(213) 645-4908

The American Academy of Ophthalmology strongly supports the goal of early detection and treatment of health problems in America's children. Attainment of this goal is particularly essential when vision is involved. The extraordinary importance of the visual system to the development of a child, including the ability to recognize and deal with the environment and to thus become a "normal" child and ultimately a maximally productive adult, cannot be overstated.

As far as the visual system is concerned, infants and children are not simply little adults. Their visual system is unique. The complexity of the developing visual system in an infant and a child makes it a very special subject. For example, there is great contrast in a disease like glaucoma as to how it affects infants as opposed to adults. Glaucoma, a slow insidious adult disease, produces rapid, devastating changes in infants' eyes if not promptly recognized and treated. Animal research¹ and human clinical experiences² show that proper functioning of the visual system from birth is essential to normal development.

For example, in an adult a cataract can obscure vision indefinitely and the eye still exhibits good vision upon removal of the cataract; yet any delay in treating a cataract of an infant or young child can cause permanent, irreversible, and profound loss of sight.³ Even failure to promptly recognize and treat strabismus (misaligned eyes) will usually result in visual deficits and/or the loss of binocularity, the ability of the child to use his eyes together.

The social and economic costs of a blind child in our society are indeed great. In 1972 alone, the total annual cost of visual disorders in America was \$5 billion.⁴ This includes direct costs such as doctor visits, and indirect costs such as Supplemental Security Income payments and loss of federal income taxes. This figure does not include state and local

government contributions to the support of the blind. To this figure we must add the cost of at least 5,150 cases of legal blindness in the under 20 age group a year.⁵

An estimated 4.4 million office visits are made annually for eye care by children under age 15. An estimated 97,000 children under age 15 require hospitalization each year with some 98,000 eye operations being performed.

Poor binocular vision (which can result from strabismus) continues for a lifetime and usually eliminates fully productive careers for this group of patients. Depth perception is required for surgeons, craftsmen, pilots, etc. The cosmetic defect from deviated eyes takes its toll in depriving the patient of self-assuredness and can prevent reaching certain levels of achievement that demand the highest quality of appearance. Subtle hostile attitudes by the parents toward the strabismic (cross-eyed) child occasionally are transferred. If corrected to "straight eyes," the improved appearance corrects attitudes and, most important, physical and mental productivity.

More than any other segment of our population, children need early evaluation and prompt care of eye problems. Failure to do so may deprive the child of the opportunity to grow to become a normal two-eyed seeing adult, and deprive society of an individual functioning to maximum potential.

Eye Problems

Strabismus (misaligned eyes) affects about four percent of the population.⁶ Surgical treatment during a child's first year provides a vastly improved chance for binocularity and helps straighten eyes permanently. In fifty percent of such cases the failure to recognize and treat the condition results in amblyopia (decreased vision in one eye). Other consequences of strabismus are poor binocularity and a cosmetic defect ("cross-eyed", "wall-eyed").

Amblyopia (caused by disuse of one eye) also affects four percent of the child population. (This four percent partially overlaps with the strabismic four percent.) Its most frequent cause is strabismus, with the poor eye "turning off". The next leading cause is a marked difference in refractive error of the eyes (the most out-of-focus eye "turns off"). If untreated, several things may occur: profound and irreversible visual deficit in the affected eye, loss of depth perception, and risk of enduring a lifetime of low vision if the good eye later becomes diseased or injured.

Refractive errors requiring eyeglasses exist in nearly twenty percent of the pediatric

population prior to the attainment of full growth. The most common form, myopia (difficulty with distance seeing) is usually seen in school age children and is correctable with eyeglasses. Hyperopia or farsightedness can cause problems in seeing close work, but, due to the very strong focusing ability of children, is rarely a problem necessitating correction in children (unless it causes crossed eyes). Astigmatism (unequal curvature of the refractive surfaces of the eye) necessitates corrective eyeglasses if it causes blurred vision or discomfort. These refractive problems, unless large, usually do not cause difficulties until children are of school age. Unless there is a marked amount of myopia, hyperopia, or astigmatism, or a significant difference between the eyes, eyeglasses will adequately compensate for the problem. Only if amblyopia is present will uncorrected or poorly corrected refractive errors cause permanent loss of vision or eye defect. Although refractive error certainly should be recognized, and treated if sufficiently large, the prognostic implications and the urgency of dealing with the problem are less than with other conditions.

Learning Disabilities

Visual deficits have been erroneously cited by some groups to be the cause of learning disabilities, behavior problems and delinquency in children. While it is recognized that sight is important in gathering the large amount of visual data demanded by our learning processes, provision of proper eye care to children cannot be expected to eliminate learning problems, behavior problems or delinquency. Although this area is not classified as a visual disorder, sources are claiming a close relationship between visual proficiency, learning ability and behavior conditions.

The American Academy of Ophthalmology wishes to clarify its position on this important matter. Learning is a complex process involving the gathering of basic information that is integrated with prior learned information from which a meaningful response is achieved. Only recently has a significant effort been made to remedy the problem of learning disabilities estimated to exist in three to five percent of the school population. Many well intentioned attempts to explain and treat learning problems have been made with varying degrees of success. As with any complex problem having multi-factorial causes, fixation on only one particular aspect with treatment based on this sole factor is doomed to failure.

Many investigators from various disciplines with a narrow view of the subject have fallen into this trap, blaming the entire range of learning problems, behavior problems, and even juvenile delinquency on only that small part of the im-

mensely complicated mechanism with which they are familiar. To date, the many simplistic theories remain unproven.⁷ The results of treatment to test these simplistic approaches are pitifully undocumented, anecdotal, and devoid of the control that supports a scientific study.⁸ The net effect is a claim without substance to support the authors' bias.

The American Academy of Ophthalmology recognizes the desirability of proper sight for gathering visual information. However, it is noteworthy that children with refractive error, with strabismus, with poor tracking, and, in fact, children with poor sight such as nystagmic and albino children, all read and learn as well or as poorly as their nonaffected peers. Therefore, although it is recognized that these visual deficits ideally should be corrected, learning occurs without their correction. Obviously, those best qualified to deal with learning disorders are the educators, and not the vision specialists. To blame learning problems, behavior problems, juvenile delinquency, etc., on refractive errors and visual difficulties is naive. It is wasteful of time and money and thus counterproductive to the intent of the pediatric health care system to emphasize the visual system as a cause of learning problems. The American Academy of Ophthalmology endorses the concept of utilizing responsible educators to deal with learning problems by remedial educational procedures and further research to develop better remedial techniques.

Medical Eye Problems

Retrolental fibroplasia—a disease of the retina found in twenty percent of premature infants having undergone oxygen treatment—was once the leading cause of blindness in children. In 1978, the disease accounted for ten percent of the new cases of blindness under the age of five years.⁹ Five percent of its victims are left with a permanent problem. It may cause retinal detachment during the teenage years. The incidence of retrolental fibroplasia de-

creased but is reemerging as use of needed oxygen therapy rises in the salvage of high risk infants.

Eye injuries pose yet another threat. Each year, 160,000 school children (age 5-17) suffer eye injuries, many of which are preventable. Recent studies show that examination of the eyes may reveal the first sign of abuse in children.¹¹

Recommendations

1. **Screening.** For reasons pointed out earlier, screening is perhaps the most important factor in the eye health care equation.

A. Although no effective treatment for retrolental fibroplasia exists, it is desirable that premature babies have an ophthalmologic examination in the hospital before discharge.

B. Infants with high risk such as family history of retinoblastoma, congenital cataracts, metabolic disease, genetic disease, etc., should have an ophthalmological examination in the nursery.

C. All infants should have routine screening by a pediatrician or family practitioner by age six months to evaluate fixation preference and ocular alignment, and an examination for ocular disease.

D. Infants or older children should be referred for thorough ophthalmologic evaluation when familial, genetic, or epidemiologic problems are felt to indicate particularly high risk in that child.

E. Children should be screened by age three or four by a medical practitioner or pediatrician for visual acuity, ocular alignment, and ocular disease.

F. Screening of school age children in schools, churches, synagogues, community centers, clubs, etc., by volunteer organizations such as local Societies to Prevent Blindness, for visual acuity and ocular alignment should be a regular occurrence.

G. Instruction of lay people to do screening in areas where volunteer organizations are not available is appropriate.

H. Follow-up visual screening in the schools on an annual basis is also recommended.

2. **Follow-up.** Referral of infants and small children must be to an ophthalmologist due to the serious medical implications of visual defects.

3. **Counseling and rehabilitation** for those who are blind or are markedly visually impaired must be pursued.

A. Review state and local mechanisms for this to ensure existence of proper facilities.

B. Develop/implement an educational program for eye practitioners informing them of existing services for this group.

4. **Public education.** Parallel to recommendations concerning screening, follow-up, and counseling is the need for motivating the public and primarily parents and guardians about the importance of appropriate pediatric eye care.

Funds should be made available to produce effective media messages to encourage the public to participate in child screening, especially vision screening. Emphasis should be placed on high risk groups such as Blacks with sickle-cell anemia and Jewish people with Tay-Sachs disease.

5. **Educational ophthalmological programs** for those physicians having initial contact with the child—pediatricians and general practitioners—should be encouraged and developed.

Financing of Services

BEST COPY AVAILABLE

The American Academy of Ophthalmology recognizes that low income families have special problems and that current programs are not adequately filling the need for good eye care. Seven million low income children are being denied inclusion in the EPSDT program and only about thirty percent of our local eligible children have been screened. Of those, seventy percent have received follow-up care.¹² There are built-in disincentives to participate in the program, poor coordination, and poor integration with other programs.

The American Academy of Ophthalmology believes, as does the American Medical Association and the American Academy of Pediatrics, that existing programs should be better integrated and utilized. The Academy supports many of the aims of the Child Health Assurance Program such as extended coverage to about five million children not now served. More vigorous follow-up and better statistics concerning the efficacy of policies and procedures would follow. The Academy believes improvements in existing programs would also serve the public if the CHAP program falls to current budgetary pressure.

Summary

The American Academy of Ophthalmology strongly endorses the concept of early screening and treatment of eye and visual problems of infants and children. We are concerned that the less fortunate and economically disadvantaged segment of our population is not receiving adequate eye care. We fully support efforts to include more children and to make care more cost-effective. We support the concept of working closely with other disciplines in medicine to reinforce their training so that they may better screen infants and small children for visual problems. We endorse the concept of training non-medical personnel to be effective screeners

in school age children. We support active public education aimed at increasing public awareness and participation in eye care efforts. We welcome the opportunity to work with medical and lay groups to help solve the problems of eye injuries and child abuse. We recommend that eye care efforts be directed toward these goals and strongly advise against efforts aimed at promoting vision care as a means of solving learning disabilities, behavior problems and juvenile delinquency. Finally, we invite the Select Panel to contact us for help with any issues relating to eye care that it might have.

Footnotes

1. D.H. Hubel and T.N. Wiesel. "Single Cell Responses in Striated Cortex of Kittens Deprived of Vision in One Eye." *J. Neurophysiol.*, 26:1002, 1963.
2. G.K. von Noorden and A.E. Maumenee. "Clinical Observations on Stimulus Deprivation Amblyopia (Amblyopia ex Anopsia)." *American Journal of Ophthalmology*, 65:220, 1968.
3. F. Juler. "Amblyopia From Disuse: Visual Acuity After Traumatic Cataract in Children." *Transactions Ophthalmology Society of the United Kingdom*, 41:129, 1921.
4. "Support for Vision Research," *Interim Report of the National Advisory Eye Council: Vestal Report*, 1976.
5. National Society for the Prevention of Blindness, New York, New York, 1975.
6. Kurt Simons and Robert Reinecke. "Amblyopia Screening and Stereopsis," in *Symposium on Strabismus: Transactions of the New Orleans Academy of Ophthalmology* (St. Louis, MO: C.V. Mosby, 1978).
7. *Report on Perceptual and Visual Training as a Potential Benefit Under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)*, (Washington, DC: General Accounting Office, May 1979).
8. Barbara K. Keogh. *Optometric Vision Training Programs for Learning Disabled Children: Review of Issues and Research*, (Los Angeles, CA: University of California, 1973).
9. National Society for the Prevention of Blindness, New York, New York, 1975.
10. National Society for the Prevention of Blindness, New York, New York, 1975.
11. David Friendly. "Ocular Manifestations of Physical Child Abuse", paper presented at the 75th Annual Meeting, American Academy of Ophthalmology and Otolaryngology, Las Vegas, Nevada, 1970.
12. *Governmental Relations Notes*, National Health Council, 5:8, August 1979.

Prepared by the Committee For Federal Legislation of the Secretariat for Governmental Relations, April 30, 1980

American Academy of Ophthalmology
Headquarters Office
1833 Fillmore Street
P.O. Box 7424
San Francisco, CA 94120
415 921-4700



American Academy of Ophthalmology
Office of Governmental Relations
Suite 370
1750 K Street, NW
Washington, D.C. 20006
202 223-5081

APPENDIX 5

AB 933

Assembly Bill No. 933

CHAPTER 5-3

An act to add Section 56607.5 to the Education Code, relating to special education.

[Approved by Governor September 27, 1981. Filed with Secretary of State September 28, 1981.]

LEGISLATIVE COUNSEL'S DIGEST

AB 933, Kapiloff. Special education.

Existing law provides for ongoing comprehensive evaluation of special education programs and an independent evaluation of those programs, as specified, through January 1, 1982.

This bill would require that the State Department of Education contract for a study to examine the process of identification of individuals with exceptional needs and the extent of misdiagnosis of individuals with perceptual problems, as specified. This bill would also require the department to include the intent to issue the contract in its 1982-83 fiscal year plan for federal assistance for education of all handicapped children and to utilize any funds that are available for such purposes.

The people of the State of California do enact as follows:

SECTION 1. Section 56607.5 is added to the Education Code, to read:

56607.5. (a) The State Department of Education shall contract for a study to examine the process of identification of individuals with exceptional needs to determine the extent of misdiagnosis of individuals with perceptual problems resulting in placement of those individuals into classes. The intent to issue the contract shall be included in the department's 1982-83 fiscal year state plan for federal assistance under subdivision (a) of Section 1116 of Title 20 of the United States Code. The department may utilize any funds that are available for the purposes of this section.

(b) The contract shall specifically provide for the creation of an evaluation team consisting of one neurologist, one pediatrician, one ophthalmologist, one audiologist (each trained and experienced in the diagnosis of perceptual handicaps); one optometrist trained and experienced in the identification of visual perceptual handicaps and vision therapy; and one educator trained and experienced in areas of special education dealing with perceptual learning disabilities. Each of the team members shall be selected by the Superintendent of Public Instruction after consultation with independent experts in the area of perceptual handicap identification and therapy.

(c) The contract shall specifically provide that the team shall

select and examine children currently placed in special day classes for the children identified as learning handicapped or severely handicapped, with emphasis on mentally retarded and the seriously emotionally handicapped children.

~~(d) The contract shall specifically provide that all children determined by the team to have perceptual handicaps or problems shall be placed in appropriate classes designed for children with their learning disabilities according to the recommendations of a majority of the team with the concurrence of the individualized education program team, for a period of not less than one year. The team, at the end of this period, shall again examine each of these children to determine their progress, if any, in terms of their learning experience.~~

This will not be part of the study

(e) The contract shall specifically provide that the team, in conjunction and cooperation with the State Department of Education, shall prepare a report to the department and the Legislature which shall, among other things, include the number of children examined, the number of children determined to have perceptual learning disabilities, the number of those children placed in new classes, and the academic progress of those children, if any, in their new placement at the expiration of one year.

(f) The contract shall specifically provide that the team shall, from time to time as it sees fit, check on each of the children for which a new placement is made to ensure that the children are properly placed and are receiving all of the appropriate training and therapy to which they are entitled under current California law.

(g) The purpose of this section and of the contract required by this section is to examine a sufficient number of children now placed in special day classes for the children identified as learning handicapped or severely handicapped, with emphasis on mentally retarded and the seriously emotionally handicapped children, to determine if, in fact, a significant number of children are currently being misdiagnosed and misplaced. The team shall therefore select a sufficient number of special day classes and students now placed in special day classes to be of value in a statistical sense, but sufficiently small in number to be manageable in terms of the resources, personnel, and money available for the study. The team shall specifically select at least one class of their choice in each of the following school districts: the San Diego Unified School District, the Los Angeles Unified School District, and the San Francisco Unified School District. In addition, one class shall be selected from a rural school district and one class shall be selected from a suburban school district. Each of the classes and all of the children selected for diagnosis shall be selected at the sole discretion of the evaluation team as determined by a majority of the team.

o

APPENDIX 7

Parent Consent Forms



San Francisco State University

1600 HOLLOWAY AVENUE • SAN FRANCISCO, CALIFORNIA 94132

DEPARTMENT OF SPECIAL EDUCATION

Phone: (415) 469-1161

Date

TO WHOM IT MAY CONCERN:

I give my permission for the Fresno County Schools to release
to and receive from:

Dr. Robert H. Bradfield
Department of Special Education
San Francisco State University
1600 Holloway Avenue
San Francisco, California 94132

information regarding the case history (including medical and psycho-
logical information) concerning:

Name of Child

Date of Birth

School _____

I further give permission for the evaluation of my child, by one or more
members of the San Francisco State University Multi-Disciplinary team,
including:

an Educational/Psychological Specialist
an Ophthalmologist
a Pediatrician
an Optometrist
a Neurologist
an Audiologist

I request that copies of any medical findings be forwarded to our
primary care physician:

Name _____

Address _____

Signature _____

Address _____

Relationship
to Child _____

Note: Procedures regarding pupil records comply with PL 93-380 and
California Education Code Sections: 10751; 10931-10949.



San Francisco State University

1600 HOLLOWAY AVENUE • SAN FRANCISCO, CALIFORNIA 94132

DEPARTMENT OF SPECIAL EDUCATION

Phone: (415) 469-1161

Fecha

A QUIEN CORRESPONDA:

Doy permiso al Fresno Contabo Escuelas de dar y recibir de:

Dr. Robert H. Bradfield
Departamento de Educación Especial
Universidad Estatal de San Francisco
1600 Holloway Avenue
San Francisco, CA 94132

información sobre el historial clínico (incluyendo información médica y psicológica) de:

Nombre del Niño

Fecha de Nacimiento

Además, doy permiso de que uno o varios de los siguientes miembros del equipo Multi-Disciplinario de la Universidad Estatal de San Francisco evalúe/examine a mi hijo(a). El equipo se compone de:

un Oftalmólogo
un Pediatra
un Optometrista
un Neurólogo
un Especialista en Audición

Pido que copias de los informes y resultados médicos sean mandados a nuestro médico familiar:

Nombre: _____

Dirección: _____

Dirección: _____

Firma del Padre o Encargado

Parentesco con el niño(a): _____

BEST COPY AVAILABLE

Nota: El procedimiento en cuanto al control de estudiantes, concuerda con PL 93-380 y los códigos de Educación de California, secciones: 10751; 10931-10949.

BEST COPY AVAILABLE

12-13-89
Date 日期

送呈特別兒童教育之專員：

我本人准許羅省校區教育部送出和收集有關下列學生的資料給予后列的專員：

Dr. Robert H. Bradfield
Department of Special Education
San Francisco State University
1600 Holloway Avenue
San Francisco, California 94132

這些資料是有關下列學生的個人情況(包括醫療及心理狀況)

Name of child 學生姓名

Date of birth 出生年月日

School (學校)

10

我更准許三藩市特別教育專員組(S.F. State Univ. Multi-Disciplinary Team)一位或多位分析該學生的個人情況,包括下列專員:

教育心理學專員	an Educational/Psychological Specialist
眼科醫生	an Ophthalmologist
兒科醫生	a Pediatrician
視力驗光專家	an Optometrist
神經研究專家	a Neurologist
聽覺查驗專員	an Audiologist

我請求將所有關於該學生的調查報告寄去給專責醫生(Primary care physician),地址地址如后:

Name (醫生姓名)

Address (地址)

X Signature (簽名)

與學生的關係

129

Relationship to child

APPENDIX 8

Program Samples: UNISTAR (I.E.P.) & WISC-R

UNISTAP Data Input Sheet

School Identification SAMPLE
 School System Name ELEMENTARY
 Address _____

Student Identification Information

1. Name: S 2. Birthdate: 01-07-75
 3. School: _____ 4. Grade Assignment: SPED
 5. Student I.D. #: _____ 6. Dominant Language: ENGLISH
 7. Parents Name(s): _____
 8. Address: _____
 9. Home Phone: _____ 10. Work Phone: _____

Achievement and/or Ability Levels

AREA	G.E. or A.E.*	TEST/SOURCE	DATE OF DATA
1. Social/Emotional:	<u>6.0</u>	<u>OBS</u>	<u>03-03-89</u>
2. Fine Motor:	<u>6.0</u>	<u>OBS</u>	↓
3. Gross Motor:	<u>6.5</u>	<u>OBS</u>	
4. Listening Comprehension:	<u>5.5</u>	<u>DURRELL</u>	
5. Visual Discrimination:	<u>8.7</u>	<u>BEERY</u>	
6. Oral/Expressive Language:	<u>6.6</u>	<u>ITPA</u>	
7. Written Expression:	<u>-</u>	<u>-</u>	
8. Spelling:	<u>1.4</u>	<u>WRAT</u>	
9. Reading: Word Recognition:	<u>1.4</u>	<u>WRAT</u>	
10. Reading: Comprehension:	<u>1.0</u>	<u>DURRELL</u>	
11. Math: Computation:	<u>2.1</u>	<u>WRAT</u>	
12. Math: Reasoning:	<u>7.0</u>	<u>WISC-R</u>	
13. Mental Ability:	<u>8.0</u>	<u>WISC-R</u>	

*G.E. = Grade Equivalency

A.E. = Age Equivalency

	LEVEL (CIRCLE ONE)*	SOURCE	DATE OF DATA
14. Adaptive Behavior:	1 2 3 <u>4</u> 5	<u>OBS</u>	↓
15. Mobility:	1 2 <u>3</u> 4 5	<u>OBS</u>	
16. Vision:	1 2 <u>3</u> 4 5	<u>EXAM</u>	
17. Hearing:	1 2 <u>3</u> 4 5	<u>EXAM</u>	

- *1 - Superior
 2 - Above Average
 3 - Average
 4 - Mild Disability
 5 - Severe Disability

Individualized Educational Plan for

9-24-S3

I. SCHOOL IDENTIFICATION INFORMATION

1. School System Name: ~~XXXXXX~~
2. School System Address
Street:
City: ~~XXXXXXXX~~
State:
Zip:

II. STUDENT IDENTIFICATION INFORMATION

1. Name:
2. Birthdate: 1/7/75
3. Grade Assignment: 3SPEL
4. School: MILLER
5. Student I.D. #:
6. Dominant Language: ENGLISH
7. Parent(s) Name(s): Father -
Mother -
8. Address
Street:
City:
State:
Zip:
9. Home Phone:
10. Work Phone: Father -
Mother -

III. I.E.P. IDENTIFICATION INFORMATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

1. Type of meeting: (circle one) Initial/Review/Exit
2. Meeting Date: _____
3. This plan is to begin on: _____
and will end on: _____

IV. STATEMENT OF PRESENT LEVEL OF EDUCATIONAL PERFORMANCE

1. Sources of assessment data

SOURCE/TESTS	Date ADMINISTERED	LEVEL
SOCIAL/EMOTIONAL		
AGE EQUIVALENCY	3-3-83	A.E.= 6
FINE MOTOR ABILITY		
AGE EQUIVALENCY	3-3-83	A.E.= 6
CROSS MOTOR ABILITY		
AGE EQUIVALENCY	3-3-83	A.E.= 6.05
LISTENING COMPREHENSION		
DURRELL	3-3-83	G.E.= 5.05
VISUAL DISCRIMINATION		
BERRY	3-3-83	A.E.= 6.07
ORAL/EXPRESSIVE LANGUAGE		
ITPA	3-3-83	A.E.= 6.06
SPELLING		
WRAT	3-3-83	G.E.= 1.04
READING RECOGNITION		
WRAT	3-3-83	G.E.= 1.04
READING COMPREHENSION		
DURRELL	3-3-83	G.E.= 1
MATH COMPUTATION		
WRAT	3-3-83	G.E.= 2.01
MATH REASONING		
WISC-R	3-3-83	G.E.= 7
MENTAL ABILITY		
WISC-R - MENTAL AGE	3-3-83	A.E.= 8
ADAPTIVE BEHAVIOR		
FUNCTIONAL ADAPTIVE LEVEL	3-3-83	Mild Disability
MOBILITY		
FUNCTIONAL MOBILITY LEVEL	3-3-83	Average
VISION		
FUNCTIONAL VISION LEVEL	3-3-83	Average
HEARING		
FUNCTIONAL HEARING LEVEL	3-3-83	Average

2. Profile of Present Level of Educational Performance: ON NEXT PAGE

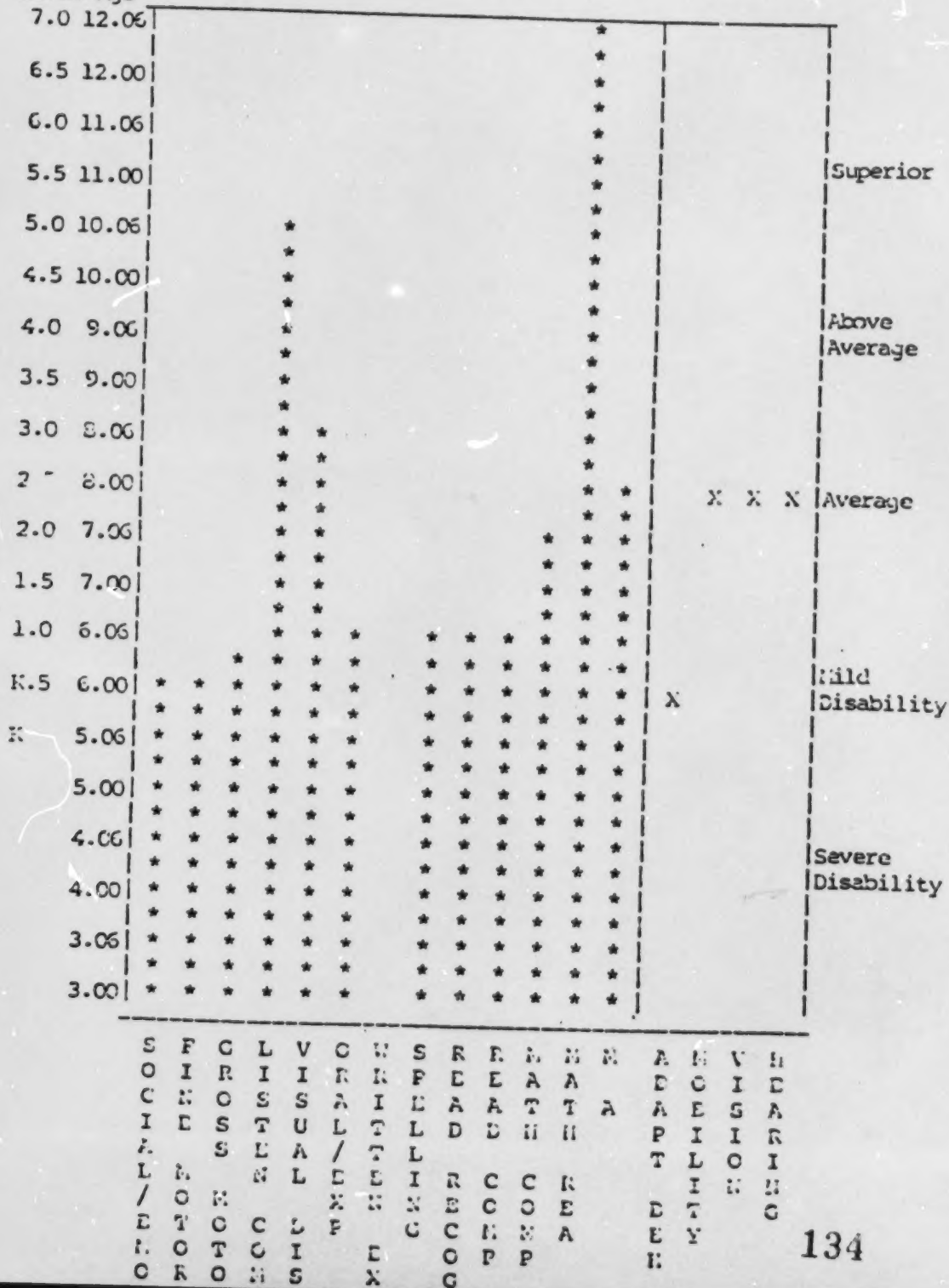
BEST COPY AVAILABLE

I. 2. FCR

PROFILE OF PRESENT FUNCTIONING LEVEL

Grade

Level Age



I. i. j.

222 2

3. Additional Statements on Present Level of Educational Performance
(write in at I.E.P. Meeting)

(write in at I.E.F. Meeting)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has some minor blemishes and a slightly textured appearance.

I.E.P.

Page 4

- V. ANNUAL GOALS AND SHORT-TERM INSTRUCTIONAL OBJECTIVES ARE ATTACHED AT THE END OF THIS REPORT

- VI. STATEMENT OF SPECIFIC EDUCATIONAL SERVICES, WHEN INITIATED AND DURATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

Type of Service/Placement*	Personnel	Frequency and Duration	Date Service Begins

*such as: resource room, speech therapy, consultation, physical therapy, self-contained class, work study, hospital, homebound, vocational skills centers, special physical education, mobility training, etc.

- VII. STATEMENT OF EXTENT TO WHICH STUDENT WILL BE ABLE TO PARTICIPATE IN REGULAR EDUCATION PROGRAMS.

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

Type of Regular Educational Programs	Personnel	Total Hours Per Week

VIII. STATEMENT OF PROPOSED EVALUATION PROCEDURES AND CRITERIA

Through teacher observation and testing a judgement will be made as to when each short-term instructional objective has been met. At the time of judged accomplishment, the date will be entered in Section V of this plan under the 'Actual Accomplishment Date' (AAD) next to each objective. All annual goals and short-term instructional objectives will be reviewed once a year and up-dated as appropriate.

IX. TEAM PARTICIPANTS

TO BE FILLED OUT AT PLACEMENT/IEP MEETING

<u>Name</u>	<u>Role *</u>	<u>Signature</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

* Chairperson, teacher, L.D. specialist, parent, student, psychologist, guidance counselor, principal, etc.

X. STATEMENT OF SCHOOL SYSTEM APPROVAL AND PARENT PARTICIPATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

1. This plan was completed and agreed upon by the placement team.

Team Chairperson: _____
Signature/Date

2. I have participated in this placement / IEP committee meeting and understand the Individualized Education Program presented herein.

Parent/Student/Guardian/Surrogate: _____
Signature/Date

٢٤٥

SOCIAL/EMOTIONAL GOAL 1.1 - The Learner Will Increase Pro-Social Behaviors To A More Appropriate Age Level.

1.1.1 RAD / / RAD / / Is able to participate in competitive play activities without becoming overly frustrated or argumentative.

1.1.2 FAD / / MAD / / Will be able to cite at least one instance of attempting to locate the owner of a lost item.

1.1.3 FAD / / AAC / / Is able to listen and accept ideas of other children.

1.4 PAB / / AAD / / Responds to physical aggression by using
ther.

1.1.5 FAD / / AAD / / Is able to demonstrate a basic sense of right and wrong.

SOCIAL/EMOTIONAL Goal 1.2 - The Learner Will Increase Emotional Stability In Relating To Self and Others.

1.2.1 PAB ___/___ AAD ___/___ Shows interest and positive attitude toward school activities.

1.2.2 / / / / Recognizes and responds to feelings of others.

1.1.3 IAD / / AAD / / Demonstrates awareness of good and bad feelings in response to films, role play, or pictures.

138

BEST COPY AVAILABLE

* L.P.
ge 7

1.2.4 PAD / / PAD / / Is aware of and accepts individual differences among classmates.

Criteria: _____

SOCIAL/EMOTIONAL GOAL 1.3 - The Learner Will Increase Self-Discipline, Responsibility, and Self Directedness To A Level More Appropriate For Age.

Short-Term Instructional Objectives:.

1.3.1 PAD / / PAD / / Will follow classroom rules 90% of time.

Criteria: _____

1.3.2 PAD / / PAD / / Is able to put on coats, sweaters, etc., with little assistance.

Criteria: _____

1.3.3 PAD / / PAD / / Is able to control own behavior, without pulsive reactions.

Criteria: _____

FINE MOTOR ABILITY

FINE MOTOR GOAL 1.1 - The Learner Will Increase Finger and Hand Dexterity, Flexibility, and Coordination To A Beginning First Grade Level.

Short-Term Instructional Objectives:

1.1.1 PAD / / PAD / / Is able to use scissors to cut out circles, triangles and squares from construction paper.

Criteria: _____

1.1.2 PAD / / PAD / / Is able to write entire name from memory so that it is recognizable.

Criteria: _____

1.1.3 PAD / / PAD / / Is able to write 15 letters so that they are recognizable.

Criteria: _____

1.1.4 PAD / / PAD / / Is able to tie own shoes although sloppy and will come untied easily.

Criteria: _____

3-2.

Page 2

1.1.5 FFD / / AFD / / Is able to roughly cut out pictures and paste them on construction paper.

Criteria:

CASE HISTORY ABILITY

GROSS MOTOR COAL 1.1 - The Learner Will Increase Motor Skills Necessary for Participation In Gymnastics At An Average First Grade Level.

Short-Term Instructional Objectives:

1.1.1 FAD FAD Is able to perform basic locomotor skills of walking, running, jumping, hopping and leaping used in gymnastics.

Criteria:

1.1.2 END AND Is able to perform the basic
non-locomotor skills of stretching, twisting and curling used gymnastics.

Criteria:

1. .3 P&D / / P&D / / Is able to combine two or more basic locomotor skills to start, stop, fall, land, roll, and crawl as these skills are used in gymnastics.

Criteria:

1.1.4 / / AND / / Is able to combine two or more non-locomotor skills such as swinging, pushing, pulling, balancing, and hanging as they are used in gymnastics.

Criteria:

CROSS MOTOR CORAL 2.1 - The Learner Will Increase The Level of Motor Skills Necessary For Participation In Games and Sports.

Short-Term Instructional Objectives:

2.1.1 / / / / Is able to demonstrate competence in the basic locomotor and non-locomotor skills necessary for participation in games.

CHIEF:

2.2 FD /// IAL /// Is able to use propelling skills of throwing, striking, kicking, and pushing a variety of objects in different directions (forward, backwards), at different levels (high, low), and at different speeds (fast

Criteria:

2.1.3 PAD ___/___/___ PAD ___/___/___ Is able to use the skills of receiving an object by catching, collecting, and trapping a variety of objects from different directions and from different levels (high, low).

Criteria: _____

GROSS MOTOR GOAL 2.2 - The Learner Will Develop A Level of Physical Fitness Commensurate With An Average Second Grade Level.

Short-Term Instructional Objectives:

2.2.1 PAD ___/___/___ PAD ___/___/___ Is able to demonstrate strength and endurance by; hanging by a bar, supporting the body in a push-up position, pulling the body along in a seal-like fashion.

Criteria: _____

2.2.2 PAD ___/___/___ PAD ___/___/___ Is able to demonstrate strength and endurance in legs by; supporting body on head and heels in back position, jumping forward with both feet, hopping alternately right and left feet.

Criteria: _____

2.2.3 PAD ___/___/___ PAD ___/___/___ Demonstrates strength in abdomen by; performing sit-ups and raising legs to pike position while hanging from a bar.

Criteria: _____

LISTENING COMPREHENSION

Goals and objectives at this level are not included

VISUAL DISCRIMINATION

VISUAL DISCRIMINATION GOAL 1.1 - The Learner Will Increase Ability To Perceive Likes and Differences In School Related Materials.

Short-Term Instructional Objectives:

1.1.1 PAD ___/___/___ PAD ___/___/___ Is able to match to sample alphabet letters that are similar but slightly different such as: C,F; U,V, etc..

Criteria: _____

1.1.2 PAD ___/___/___ PAD ___/___/___ Is able to use three geometric shapes to make a meaningful picture such as a triangle, square and rectangles of different sizes to make a house, or a truck with rectangles, squares and

I.P.
Page 10

circles, etc..

Criteria: _____

1.1.3 PAD ___/___/___ AAD ___/___/___ Is able to copy a design on paper with the use of several parquetry blocks.

Criteria: _____

VISUAL DISCRIMINATION GOAL 1.2 - The Learner Will Increase Visual Memory Ability To An Early Elementary Level.

Short-Term Instructional Objectives:

1.2.1 PAD ___/___/___ AAD ___/___/___ After looking at three geometric shapes on a sheet of paper for five seconds, is able to draw the shapes from memory on a sheet of paper.

Criteria: _____

1.2.2 PAD ___/___/___ AAD ___/___/___ After looking at a picture with a number of familiar items in it for ten seconds, is able to name four of the items after the picture has been taken away.

Criteria: _____

1.2.3 PAD ___/___/___ AAD ___/___/___ After seeing a list of three and four letter words for five seconds, is able to pick those words out of a list of ten words by pointing at the correct words.

Criteria: _____

ORAL/EXPRESSIVE LANGUAGE

ORAL/EXPRESSIVE LANGUAGE GOAL 1.1 - The Learner Will Increase Ability To Use Clear and Exact Language.

Short-Term Instructional Objectives:

1.1.1 PAD ___/___/___ AAD ___/___/___ Is able to describe an object with enough clarity that listeners can identify the object without seeing it or hearing its name.

Criteria: _____

1.1.2 PAD ___/___/___ AAD ___/___/___ Is able to relate a personal experience with accuracy.

Criteria: _____

1.1.3 PAD ___/___/___ AAD ___/___/___ Having hidden an object from the view of

classmates, is able to describe the location clear enough so that the listeners can find it.

Criteria: _____

ORAL/EXPRESSIVE LANGUAGE GOAL 1.2 - The Learner Will Increase Ability To Use Body Language, Facial Expressions, and Gestures.

Short-Term Instructional Objectives:

1.2.1 RAD ___/___/___ AAD ___/___/___ Is able to use body movements, facial expressions or gestures appropriate to the character portrayed in role-playing.

Criteria: _____

1.2.2 RAD ___/___/___ AAD ___/___/___ Is able to act out simple directions through an activity like charades.

Criteria: _____

1.2.3 RAD ___/___/___ AAD ___/___/___ Is able to present a short talk, or show-and-tell with appropriate hand and body movements.

Criteria: _____

ORAL/EXPRESSIVE LANGUAGE GOAL 2.1 - The Learner Will Increase Ability to Use Appropriate Eye Contact In Speaking Situations.

Short-Term Instructional Objectives:

2.1.1 RAD ___/___/___ AAD ___/___/___ Is able to use puppets to demonstrate eye contact with another puppet or the audience.

Criteria: _____

2.1.2 RAD ___/___/___ AAD ___/___/___ Is able to engage in a discussion with a classmate and maintain eye contact.

Criteria: _____

2.1.3 RAD ___/___/___ AAD ___/___/___ Is able to engage in a discussion with the teacher or other adults and maintain eye contact.

Criteria: _____

2.1.4 RAD ___/___/___ AAD ___/___/___ Is able to relate a story or show-and-tell and look into the eyes of various audience members.

Criteria: _____

I.F.P.
P 12

2.1.5 PAD / / AAD / / Is able to participate in a group discussion and look at the other members of group while speaking and listening (most of the time).

Criteria: _____

ORAL/EXPRESSIVE LANGUAGE GOAL 2.2 - The Learner Will Increase Ability To Orally Use Reasoning Skills Of Comparison, Contrasting, Classifications, Sequencing, and Cause and Effect Relationships.

Short-Term Instructional Objectives:

2.2.1 PAD / / AAD / / When given two related objects (paper and pencil), is able to compare likenesses and differences.

Criteria: _____

2.2.2 PAD / / AAD / / When given an example of a cause and effect relationship (chair breaking under Coldilocks) is able to verbalize the cause and the effect.

Criteria: _____

2.2.3 PAD / / AAD / / When given a group of pictures, i.e., things you can eat, things to wear, is able to classify the pictures and give an explanation for the groupings.

Criteria: _____

ORAL/EXPRESSIVE LANGUAGE GOAL 2.3 - The Learner Will Increase Ability To Use Speech For Four Major Purposes: Ask and Answer Questions; Express Feelings and Opinions; Entertain; Display Courtesy, and Conform to Social Customs.

Short-Term Instructional Objectives:

2.3.1 PAD / / AAD / / Is able to ask questions as needed.

Criteria: _____

2.3.2 PAD / / AAD / / Is able to answer questions and give single directions.

Criteria: _____

2.3.3 PAD / / AAD / / Is able to clearly state name, age, address, telephone number, and name of parents or guardian.

Criteria: _____

2.3.4 PAD / / AAD / / Is able to role play the correct way to

I.M.P.
P. 13

answer the telephone.

Criteria: _____

2.3.5 PND ___/___/___ HAD ___/___/___ Is able to introduce two people.

Criteria: _____

SPELLING

WRITTEN EXP./SPELLING GOAL 1.1 - The Learner Will Be Able To Clarify and Organize Ideas and Feelings Before Writing.

Short-Term Instructional Objectives:

1.1.1 PND ___/___/___ HAD ___/___/___ Is able to place pictures in appropriate sequence when given three pictures illustrating a series of related events.

Criteria: _____

1.1.2 PND ___/___/___ HAD ___/___/___ Is able to orally organize thoughts that will be written, before writing two or more sentences.

Criteria: _____

WRITTEN EXP./SPELLING GOAL 1.2 - The Learner Will Increase Ability To Spell Simple, Regular, One Syllable Words.

Short-Term Instructional Objectives:

1.2.1 PND ___/___/___ HAD ___/___/___ Is able to spell the most commonly used two-letter, phonetically regular words, e.g., be, no, at, to, or, an, in, of, it, etc.

Criteria: _____

1.2.2 PND ___/___/___ HAD ___/___/___ Is able to spell on dictation c-v-c words most commonly encountered at the first grade level, e.g., cat, map, dan, fan, pig, dog, nap, lap, sat, etc..

Criteria: _____

READING RECOGNITION

READING RECOGNITION GOAL 1.1 - The Learner Will Develop An Oral Vocabulary At A First Grade Level.

Short-Term Instructional Objectives:

Page 12

1.1.1 FAD AND has developed an adequate speaking vocabulary sufficient to convey ideas.

Criteria: _____

1.1.2 FAD / / FAD / / Is able to retell a story that has previously been told.

Criteria: _____

1.1.3 FAD ___/___/___ AAD ___/___/___ Can dictate simple sentences and stories.

Criteria: _____

READING: RECOGNITION GOAL 1.2 - The Learner Will Increase Ability To Distinguish between Like and Unlike Consonant-Vowel-Consonant (C-V-C) words.

Short-Term Instructional Objectives:

1.2.1 FAD ___/___ FAD ___/___ Is able to correctly indicate if pairs of c-v-c words sound alike or not alike when initial and ending consonant sounds vary, e.g., bob-bob; bob-nop.

Criteria: _____

1.2.2 AND AND Is able to indicate correctly pairs of c-v-c words that sound alike and pairs of c-v-c words that do not sound alike when the initial consonant sound varies, e.g., tot-tot; bat-sat.

Criteria: _____

1.2.3 FAD / / FAD / / Is able to indicate correctly pairs of c-v-c words that sound alike and pairs of c-v-c words that do not sound alike when the final consonant sound varies, e.g., job-job; job-jog.

Criteria: _____

READING: RECOGNITION. GOAL 1.3 - The Learner Will Increase Sight Recognition of Words Included In the Preprimer, Primer, and First Grade Adopted Readers.

Short-Term Instructional Objectives:

1.3.1 / / / / Can recognize and pronounce a stimulus word among four choices at the preprimer level.

Criteria: _____

1.3.2 2nd ___/___/___ 7th ___/___/___ Can recognize and pronounce a stimulus word from among four choices at the primer level.

Criteria: _____

1.3.3 PAD / / AAD / / Is able to recognize and pronounce a stimulus word from among four choices at the first grade reader level.

Criteria: _____

1.3.4 PAD / / AAD / / Is able to recognize from memory 10 basic survival words such as found on the Corlett-Wilson Essential Vocabulary list.

Criteria: _____

READING: RECOGNITION GOAL - 1.4 The Learner Will Increase Ability To Auditorily Recognize Common Consonant Sounds.

Short-Term Instructional Objectives:

1.4.1 PAD / / AAD / / Is able to identify correctly consonant letters in response to the letter sound, e.g., b,c,d,f,g,m, etc..

Criteria: _____

1.4.2 PAD / / AAD / / Is able to identify correctly final consonant letters in response to hearing short c-v-c words containing the sound.

Criteria: _____

1.4.3 PAD / / AAD / / Is able to identify correctly initial consonant letters in response to hearing a short c-v-c word containing the sound.

Criteria: _____

READING COMPREHENSION

READING: COMPREHENSION GOAL 1.1 - The Learner Will Increase Literal Comprehension To A Beginning First Grade Level.

Short-Term Instructional Objectives:

1.1.1 PAD / / AAD / / Is able to arrange a picture story in order of events.

Criteria: _____

1.1.2 PAD / / AAD / / Is able to express the main idea of a picture, a sentence, or a short paragraph.

I.E.P.
1 e 10

Criteria: _____

1.1.3 RND / / RAL / / Is able to listen to, and follow the directions read.

Criteria: _____

READING:COMPREHENSION GOAL 1.2 - The Learner Will Increase Inferential Comprehension To An Average First Grade Level.

Short-Term Instructional Objectives:

1.2.1 RND / / RAL / / Is able to draw conclusions from a short (five sentences or less) paragraph at an appropriate word recognition level.

Criteria: _____

1.2.2 RND / / RAL / / Is able to identify cause and effect relationships in pictures or in a sentence.

Criteria: _____

MATH COMPUTATION

MATH:COMPUTATION GOAL 2.1 - The Learner Will Demonstrate Ability to Perform Computation At A Second Grade Level of Ability.

Short-Term Instructional Objectives:

2.1.1 RND / / RAL / / Is able to use manipulative materials to demonstrate all of the whole number combinations which produce sums up to 10 or 12.

Criteria: _____

2.1.2 RND / / RAL / / Is able to use manipulative materials to show the subtraction facts related to any known addition facts ($6+2=8$; $8-2=6$; $8-6=2$).

Criteria: _____

2.2.3 RND / / RAL / / Can explain and demonstrate the meaning of zero in such number sentences as $4+0=4$ and $4-0=4$.

Criteria: _____

2.1.4 RND / / RAL / / Is able to use concrete materials to prove reversibility (checking subtraction by addition) i.e., use 7 pennies to

I .P.
Page 17

show $7-4=3$; $3+4=7$.

Criteria: _____

2.1.5 PAD / / PAD / / Is able to record and read the mathematical notation (horizontal and vertical form) for any known addition and subtraction facts.

Criteria: _____

2.1.6 PAD / / PAD / / Is able to respond to and use addition facts with sums to 10 or 12 without counting.

Criteria: _____

2.1.7 PAD / / PAD / / Is able to respond to and use subtraction facts with minuends up to 10 or 12 without counting.

Criteria: _____

2.1.8 PAD / / PAD / / Is able to add and subtract two-digit numbers requiring no regrouping.

Criteria: _____

DATA REASONING

Discrepancy not great enough or Goals & Objectives not included at this level.

Southern Micro Systems for Educators
P.O. Box 1981
Burlington, NC 27215

WISC-R COMPUTER REPORT
Data Sheet

Name: SAMPLE

Date of Test: 93 yr. 1 mo. 31 day

Date of Birth: 72 yr. 10 mo. 30 day

Grade 4 Class SPED

Referring Educator or School:

GRIFFEN

Achievement Test: Enter Grade Equivalents. Percentiles and Standard Scores may be entered also. Use the total GE for reading, spelling and arithmetic. For a complete report, enter all three areas.

Achievement Test Name:

WRAT & DURRELL

Reading 1.0 GE _____ % tile _____ Standard Score

Spelling 1.5 GE _____ % tile _____ Standard Score

Arith. 2.6 GE _____ % tile _____ Standard Score

WISC-R Scores. For a complete report, enter all 12 sub-test scores.

Scaled Scores

Information	<u>1</u>
Similarities	<u>5</u>
Arithmetic	<u>3</u>
Vocabulary	<u>3</u>
Comprehension	<u>6</u>
Digit Span	<u>2</u>
Picture Completion	<u>6</u>
Picture Arrangement	<u>2</u>
Block Design	<u>3</u>
Object Assembly	<u>2</u>
Coding	<u>4</u>
Mazes	<u>7</u>

VIQ 22 PIQ 16 FSIQ 38

GRIFFIN

Grade 4 Class ER

Date of Test 83 yr. 1 mo. 31 day

Date of Birth 72 yr. 6 mo. 30 day

Age 10 yr. 7 mo. 1 day

Southern Micro Systems for Educators (SMSFE)

P.O. Box 1981, Burlington, N.C. 27215

Copyright 1982. All rights reserved. Not to be reproduced in whole or in part by any means without written permission from SMSFE.

This computer report was developed by Charles L. Nicholson, PH.D.

Practicing Psychologist for SMSFE. It is based on the WISC-R scaled

scores, the three IQs and achievement test results, and contains

interpretations, recommendations, the WISC-R factors and other

descriptive statements. Some of these statements should be considered

as only HYPOTHESES which should be investigated further with other

instruments or observations. The validity of this report depends

on the validity of the subtest scaled scores, achievement test

results and responses of ERIKA.

EVALUATIONS BASED ON THE SUBTESTS OF THE WISC-R.

Education, cultural knowledge and long term memory is very low.

Ability to see relationships between things and ideas is low.

Ability to calculate and do simple mental arithmetic is low.

Verbal word knowledge, word fluency and judgment is low.

Practical social knowledge and social judgment is below average.

Short - term verbal number memory and attention span is very low.

Ability to separate essential and nonessential parts is below average.

Ability to plan ahead, understand sequences of action is very low.

Ability to make an abstract design from its parts is very low.

Ability to see and make an object from its parts is very low.

Ability to learn and memorize non - verbal material is low.

Ability to concentrate and plan ahead non - verbally is below average.

WISC-R Subtests, Scaled Scores, Percentiles and IQs

Subtest	Scaled Score	%tile	Subtest	Scaled Score	%tile
Information	1	1	Picture Completion	6	9
Similarities	5	5	Picture Arrangement	2	1
Arithmetic	5	5	Block Design	2	1
Vocabulary	5	5	Object Assembly	2	1
Comprehension	6	9	Coding	4	2
Digit Span	2	1	Mazes	7	16
Verbal Scale IQ	22	1	Performance Scale IQ	16	1
Full Scale IQ	38	1			
Achievement Test Scores			Grade Equivalent		

PAT AND DURRELL

Reading Achievement	1
Spelling Achievement	1.5
Arithmetic Achievement	2.6

Based on the Verbal Scale, mental age is approximately 2.3 years; achievement should be about -3.3 grade level; and a theoretical achievement at age 16 should be about -2 grade level.

Based on the Performance Scale, mental age is approximately 1.6 years; achievement should be about -4 grade level; and a theoretical achievement at age 16 should be about -3 grade level.

The WISC-R Verbal Scale shows ability at the EMH level.
WISC-R Performance Scale ability is at the EMH level.
The WISC-R Full Scale shows ability at the EMH level.

The 95% confidence limits for the Verbal Scale are 15 and 29.
The 95% confidence limits for the Performance Scale are 7 and 25.
The 95% confidence limits for the Full Scale are 32 and 44.
This means that with 95% certainty ~~SAMPLE~~ true Verbal IQ, Performance IQ and Full Scale IQ lie between these limits.

Based on overall ability, weakness is shown in the following areas:
general education, cultural knowledge and long term memory;
Based on overall ability, strength is shown in the following areas:
practical social knowledge and social judgment;
ability to distinguish essential and nonessential parts, note detail;
ability to attend, concentrate and non-verbal planning ahead.

The following are compared with the WRAT AND DURRELL.
In reading, S is achieving one or more levels above the expected level based on the Verbal Scale.
In spelling, S is achieving one or more levels above the expected level based on the Verbal Scale.
In arithmetic, S is achieving one or more levels above the expected level based on the Verbal Scale.
In reading, S is achieving one or more levels above the expected level based on the Performance Scale.
In spelling, S is achieving one or more levels above the expected level based on the Performance Scale.
In arithmetic, S is achieving one or more levels above the expected level based on the Performance Scale.

The severe discrepancy level (Harris) based on the Verbal Scale is 0.
The severe discrepancy level (Harris) based on the Performance IQ is -.2.
The severe discrepancy level (Harris) based on the Full Scale is .6.
Achievement below these grade levels is critical and should be considered in a possible classification of learning disabled.

The following ranges of learning disability achievement levels are based on S Verbal Scale IQ.
Mild: -3.2 and -4.9 Moderate: -4.9 and -5.7 Severe: below -5.7
The following ranges of learning disability achievement levels are based on S Performance Scale IQ.
Mild: -3.9 and -5.6 Moderate: -5.6 and -6.4 Severe: below -6.4

There is very little or no scatter between S's three major factor scores (Verbal Comprehension, Perceptual Organization, and Freedom from Distractability.) This indicates that is functioning at or about the same level in these three factor areas.

The level of the factors and influences are indicated below. If the factor or influence is significantly above or below the level expected this is also shown, along with its comparison to the mean of all the scaled scores, and the mean of the Verbal or Performance scaled scores, where applicable.

Those factors and influences which are significantly above the expected level could be considered as possible assets for . Those factors which are significantly below the level expected could be contributing to S's low performance in school and on the WISC-R. Some of these should be investigated further by other instruments.

The following factors and influences are calculated using Verbal and Performance subtests and are compared to the mean of all the scaled scores.

	Significant	Very	Above	Below	Very
	VorP	Full	High	High	Avg
Freedom from distractability					X
Sequencing					X
Facility with numbers					X
Freedom from anxiety					X
Cognition (Guilford)					X
Reasoning					X
Evaluation (Guilford)					X
Distinguish essential from nonessential details					X
Learning ability					X
Social judgment					X
Concentration				X	
Cultural opportunities					X

The following factors and influences are based on Verbal scaled scores and are compared to the mean of the Verbal and all scaled scores.

Memory (Guilford)					X
Mental alertness					X
Verbal conceptualization					X
Acquired knowledge					X
degree of abstract thinking					X
Fund of information					X

	Significant VorP	Very Full	Very High	Above High	Above Avg	Below Avg	Below Avg	Very Low	Very Low
Long-term memory								X	
Verbal concept formation								X	
Verbal expression								X	
Extent of reading and/or interests								X	
Enrichness of environment									X
Attention span								X	

The following factors and influences are based on Performance scale scores and are compared to the mean of the Performance and all scale scores.

Perceptual organization								X	
Spatial								X	
Integrated brain functioning								X	
Planning ability								X	
Visual-motor coordination								X	
'Culture-fair' ability								X	
Ability to respond when uncertain								X	
Convergent production (Guilford)									X
Holistic (right brain) functioning								X	
Reproduction of a model									X
Synthesis									X
Visual memory								X	
Visual organization without motor activity								X	
Visual perception of abstract stimuli									X
Visual perception of meaningful stimuli									X
Cognition style field dependence-field independence									X
Working under exact time pressure									X

Some of the following statements, especially those referring to behavior and adjustment, should be considered as only HYPOTHESES which should be investigated further with other instruments or observations.

The subtest pattern of ~~2.1~~ is similar to those dyslexic subjects in Bannetyne's research which exhibited minimal neurological dysfunction. This should be investigated further before a definite diagnosis is made.

The following subtest scaled scores(s) are above the level expected. Some POSSIBLE reasons for the elevations are listed.

Comprehension. Possible causes are: good social knowledge; good common sense; good social intelligence; good exposure to cultural ways; possible paranoid personality.

Picture Completion. Possible reasons are: ability to note detail; ability to separate essential from non:essential parts; good visual acuity; ability to concentrate visually; ability to attend; a possible paranoid personality; good visual memory.

Mazes. Possible causes are: good ability to plan ahead; good good visual-motor ability; good facility with a pen; good visual tracking ability; a perfectionist personality.

The following subtest scaled score(s) is (are) below the level expected. POSSIBLE causes for the depressed scores are listed.

Information. Possible causes are: lack of exposure to the culture and environment; poor long term memory; a narrow range of interests lack of educational opportunities; a possible deficit in auditory input; possible repression; a verbal output problem.

Recommendations

Based on the subtests of the WISC-R suggested remediations are in the TEACHER'S GUIDE by Nicholson and Alcorn, published by Western Psychological Services, 12031 Wilshire Boulevard, Los Angeles, California 90025, for the following subtests at the indicated developmental level of 6-8 years (A):

Information (1);

and for the following developmental years 6-8 years (A):

Evidence from the WISC-R subtests indicates better aptitude for verbal reasoning and problem solving than recall or memory. The teacher should encourage problem solving and reasoning by providing problems which S can solve yet be challenging. Memory training should also be provided.

APPENDIX 9

Team Assessment Forms:

- A. Individual Questionnaire
- B. Team Assessment Questionnaire
- C. Rating Scale

INDIVIDUAL QUESTION FORM

Student Name _____ Profession _____

1. To what extent does the existing school record provide sufficient assessment information?

* * * * *
 Not Minimal Barely Satisfactory Extensive
 At Satisfactory
 All

Specify problems indicated:

2. To what extent does the present assessment differ from prior assessment (school record)?

* * * *
 Not Slightly Importantly Dramatically
 At
 All

Specify details:

3. To what extent should your current assessment affect students' school placement or educational programming?

* * *
 Not At All Marginally Significantly

Specify details:

4. Do current student placement and recommendations appear appropriate?

* * * *
 Completely Satisfactory Somewhat Greatly
 Inappropriate Inappropriate

Specify details:

5. To what extent do current educational objectives (I.E.P.) appear to require modification based on your findings?

★	★	★	★
Not At All	Slightly	Significantly	Dramatically

Specify details:

6. Does this student evidence perceptual disabilities which are not reflected in current school records (assessment and placement)?

★	★
Yes	No

Specify details:

(To be completed by Team Leader)

TEAM ASSESSMENT

Student Name _____

1. Does the team agree that the student is currently appropriately placed?

	Agree	Disagree
Audiologist	_____	_____
Neurologist	_____	_____
Ophthalmologist	_____	_____
Optometrist	_____	_____
Pediatrician	_____	_____
Psychologist	_____	_____

If disagreement with current placement, indicate nature of disagreement:

2. Does the team agree that the educational objectives (I.E.P.) for the student are appropriate?

	Agree	Disagree
Audiologist	_____	_____
Neurologist	_____	_____
Ophthalmologist	_____	_____
Optometrist	_____	_____
Pediatrician	_____	_____
Psychologist	_____	_____

If disagreement, indicate details:

3. Does this student evidence perceptual disabilities which are not reflected in current school records (assessment and placement)?

	Yes	No
Audiologist	_____	_____
Neurologist	_____	_____
Ophthalmologist	_____	_____
Optometrist	_____	_____
Pediatrician	_____	_____
Psychologist	_____	_____

Specify details:

DECISION RATING SCALE

Child's Name _____

Rater _____

IN MAKING YOUR TEAM DECISION, WHICH DATA MOST INFLUENCED YOUR DECISION?

PLEASE RANK, FROM NUMBERS 1 (HIGH) TO 6 (LOW); IF EQUIVALENT RATINGS ARE DUE TO MORE THAN ONE SPECIALTY, ASSIGN THE SAME NUMBER.

1 ★	2 ★	3 ★	4 ★	5 ★	6 ★
HIGH					LOW

_____	Neurological
_____	Pediatric
_____	Optometric
_____	Ophthalmologic
_____	Audiological
_____	Educational/Psychological

APPENDIX 10

School Sites

SCHOOL SITES

<u>City</u>	<u>Address</u>
FRESNO	Madison Elementary School Central Unified School District 330 So. Brawley Fresno, CA 93706 Jeffrey Garratt, Principal
SAN FRANCISCO	McKinley Elementary School San Francisco Unified School District 1025 - 14th St. San Francisco, CA
SAN MATEO	Lakeshore Elementary School San Mateo Unified School District 2717 S. Norfolk St. San Mateo, CA 94403
SAN DIEGO	Miller School San Diego Unified School District 10383 Orleck St. San Diego, CA 92124 Rosary Napi, Principal
LOS ANGELES	Griffen Avenue Elementary School Los Angeles Unified School District 2025 Griffen Ave. Los Angeles, CA 90031 Mrs. McClintick, Principal

APPENDIX 11

Professional Team Consultants at Sites

Professional Team Consultants at Sites

PROFESSION	FRESNO	SAN FRANCISCO	SAN MATEO	SAN DIEGO	LOS ANGELES
BIOLOGY	Rick Vaughn, Ph.D.	Stanford Lamb, Ph.D.	Stanford Lamb, Ph.D.	Donald Krebs, Ph.D.	Jill Schoenberg, M.A.
EDUCATION	Mildred Lusardi, Ph.D.	Mildred Lusardi, Ph.D.	Mildred Lusardi, Ph.D.	Mildred Lusardi, Ph.D.	Mildred Lusardi, Ph.D.
UROLOGY	Harry Edmonds, M.D.	Douglas Crowther, M.D.	Douglas Crowther, M.D.	David Paa, M.D.	Eric Saslow, M.D.
OPHTHALMOLOGY	Richard Whitten, M.D.	Earl Stern, M.D.	Earl Stern, M.D.	Salvatore Stella, M.D.	Bronwyn Bateman, M.D.
OPTOMETRY	Stephen Lankford, O.D.	David Grisham, O.D.	David Grisham, O.D.	Ralph Schrock, O.D.	Don Getz, O.D.
PSYCHIATRIC	Linda Fraley, M.D.	Henry Richanbach, M.D.	Henry Richanbach, M.D.	Harold Sterling, M.D.	Mario Valenti, M.D.
PSYCHOLOGY	Robert Bradfield, Ph.D.	Robert Bradfield, Ph.D.	Robert Bradfield, Ph.D.	Robert Bradfield, Ph.D.	Robert Bradfield, Ph.D. Lynette Gonzales, Ph.D.